

have been obvious to one of ordinary skill in the art to provide a photoreceptor made of amorphous selenium-based multilayer structure in the detector of Morton in order to obtain high gain avalanche multiplication as taught by Elabd. This conclusion is neither understood, nor accepted.

Morton deals with x-ray detection using a pixelated receptor structure necessary to avoid lateral leakages, as well as an indirect conversion through a photoreceptor/scintillator structure and an amorphous silicon photoreceptor which is structured by lithography into pixels covered with a thallium-doped cesium iodide yellow emitting scintillator or with a scintillator of another kind to which the amorphous silicon is sensitive (which excludes blue and sodium-doped cesium iodide).

Elabd, on the other hand, deals with light detectors and conversion of light into charges, as well as avalanche multiplication of these charges within the light converter to obtain quantum gain, which is the basis of Elabd's invention. Selenium material is used as a converter and multiplication media. This selenium material has a non co-planar structure which works at a very high voltage detrimental. There is absolutely no indication in Elabd that the photoreceptor of Morton could be replaced by a co-planar thin layer of amorphous selenium-based multilayer structure, since the detection in Elabd is that of light, not x-rays, and the structure is neither co-planar, nor multilayered, as set out in claim 1 of the present application.

Moreover, on page 7, lines 14-15 of this application, it is clearly stated that the selenium multilayer of the present invention is operated under an electric field (5 - 50V  $\mu\text{m}$ ) having a gain close to 1, with no avalanche multiplication. Thus, the Examiner's statement that

it would be obvious to combine Morton with Elabd to obtain high gain avalanche multiplication, does not apply to the present invention or to claim 1 at all. In fact, if one combined Morton with Elabd, the combination would not work according to the teaching of the present application, since the essential co-planar thin layer of amorphous selenium-based multilayer structure does not exist in either of these references. Furthermore, it would not work because the scintillator of Morton is not adapted to the avalanche selenium of Elabd. The high voltage required for avalanche in Elabd and the pin structure (p underneath) would blow-up the TFT's. Avalanche, the core of Elabd's invention is not required, either in Morton or in the present application, as claimed in claim 1 or any other claim. Moreover, the main simplification produced by the co-planar structure of the present invention which has no lithography required to shape amorphous silicon or selenium into pixels, is mentioned by neither Morton nor Elabd.

Thus, the present invention, as claimed in claim 1, relating to an x-ray detector using a co-planar receptor structure and an indirect conversion through a photoreceptor/scintillator co-planar structure in which the photoreceptor is an amorphous selenium-based multilayered structure where the lateral leakage of charges does not occur and which does not require the complicated lithography used by Morton and which is totally ignored by Elabd, is neither disclosed, nor suggested by the Morton-Elabd combination which, in any event, could not lead to a workable arrangement as already explained above.

Thus, it is submitted that claim 1 is novel and patentable over Morton and Elabd, taken singly or in combination with one another.

All the other claims are directly or indirectly related to claim 1 and are, therefore, novel and patentable for the same reasons as claim 1. In particular, claim 20 is unique in that blue scintillators would not work with amorphous silicon photoreceptors. It is essential to use selenium receptors, which is not mentioned by Elabd, since he is not concerned with indirect x-ray detection at all. Elabd's detector uses a direct light-to-charge process, which is not intended for x-rays. This is another reason why it would not be obvious to anyone having ordinary skill in the art to combine Morton with Elabd.

It is, therefore, submitted that all claims as they presently stand in this application, should be found patentable and an early favorable action is accordingly solicited. The Examiner is invited to call applicant's agent if any questions remain following review of this response.

Respectfully submitted,



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